

Exhibit 1

**INTEL INVENTION DISCLOSURE**  
**ATTORNEY-CLIENT PRIVILEGED COMMUNICATION**  
**PLATFORMS/EPT/APT**

**27404**

It is important to provide accurate and detailed information on this form. The information will be used to evaluate your invention for possible filing as a patent application. When completed and signed, please return this form to the Legal Department at JF3-147. If you have any questions, please call 264-0444.

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\*If you are unsure of this information, please discuss with your manager.

(PROVIDE SAME INFORMATION AS ABOVE FOR EACH ADDITIONAL INVENTOR)

2. Title of Invention: Center spreading impinging flow cold plate
3. What technology/product/process (code name) does it relate to (be specific if you can):  
liquid cooling, high density servers, 1U servers [REDACTED]
4. Include several key words to describe the technology area of the invention in addition to # 3 above:
5. Stage of development (i.e. % complete, simulations done, test chips if any, etc.): prototype, first stage development
6. (a) Has a description of your invention been, or will it shortly be, published outside Intel:  
 NO: X YES:        If YES, was the manuscript submitted for pre-publication approval?         
 IDENTIFY THE PUBLICATION AND THE DATE PUBLISHED:

- (b) Has your invention been used/sold or planned to be used/sold by Intel or others?  
NO: X YES: \_\_\_\_\_ DATE WAS OR WILL BE SOLD: \_\_\_\_\_
- (c) Does this invention relate to technology that is or will be covered by a SIG (special interest group)/standard/ or specification?  
NO: X YES: \_\_\_\_\_ Name of SIG/Standard/Specification: \_\_\_\_\_
- (d) If the invention is embodied in a semiconductor device, actual or anticipated date of tapeout? NA
- (e) If the invention is software, actual or anticipated date of any beta tests outside Intel NA
7. Was the invention conceived or constructed in collaboration with anyone other than an Intel blue badge employee or in performance of a project involving entities other than Intel, e.g. government, other companies, universities or consortia? NO: X YES: \_\_\_\_\_ Name of individual or entity: \_\_\_\_\_
8. Is this invention related to any other invention disclosure that you have recently submitted? If so, please give the title and inventors: No

**PLEASE READ AND FOLLOW THE DIRECTIONS ON  
HOW TO WRITE A DESCRIPTION OF YOUR INVENTION**

Please attach a description of the invention to this form, DATED AND SIGNED BY AT LEAST ONE PERSON WHO IS NOT A NAMED INVENTOR, and include the following information:

1. Describe in detail what the components of the invention are and how the invention works.

The components of an active liquid cooling system are a pump, heat exchanger, cold plate and tubing to connect it together. Cold plates are used in liquid cooling systems to interface with high density processors to remove heat. This invention implements impinged flow onto the cold plate base with radial fins to increase heat transfer. The flow impinges on the center of the cold plate (above the die) and radiates to the perimeter through the fins.

2. Describe advantage(s) of your invention over what is done now.

Currently, fluid flows along parallel channels inside the cold plates. The advantage of this design is that the flow impinges on the hot spot created by a small die and then flows radially outward. In this fashion, you get heat transfer from 2 paths.

3. YOU MUST include at least one figure illustrating the invention.  
If the invention relates to software, include a flowchart or pseudo-code representation of the algorithm.

4. Value of your invention to Intel (how will it be used?).

As heat density increases in Intel processors, liquid cooling inevitably will become a more common solution. Overall, liquid cooling will occupy a smaller footprint than an air-cooled system with commensurate performance. This makes it desirable for high density applications like 1U servers. Gaining intellectual property in the unique design of cold plates will increase Intel's leverage in this market segment.

5. Explain how your invention is novel. If the technology itself is not new, explain what makes it different.

This invention is novel because of the radial geometry fins and the impinging flow.

6. Identify the closest or most pertinent prior art that you are aware of.

Not aware of a pertinent art.

7. Who is likely to want to use this invention or infringe the patent if one is obtained and how would infringement be detected?

ODMs, OEMs and hardware developers of thermal solutions.

**\*HAVE YOUR SUPERVISOR READ, DATE AND SIGN COMPLETED FORM**

DATE: \_\_\_\_\_ SUPERVISOR: \_\_\_\_\_

BY THIS SIGNING, I (SUPERVISOR) ACKNOWLEDGE THAT I HAVE READ AND UNDERSTAND THIS DISCLOSURE, AND RECOMMEND THAT THE HONORARIUM BE PAID